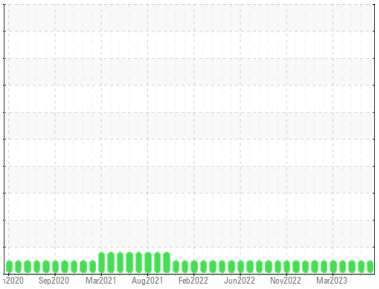
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Area
Louisville
Machine Id
[Louisville] Oil - Starboard Main Engine
Component
Starboard Main Engine
Fluid
DIESEL ENGINE OIL SAE 15W40 (150 GAL)

DIAGNOSIS

Recommendation
Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

Contamination
There is no indication of any contamination in the oil.

Fluid Condition
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0769309**	WC0735844	WC0735411
Sample Date		Client Info		**05 Jul 2023**	05 Jun 2023	20 May 2023
Machine Age	hrs	Client Info		**0**	36718	0
Oil Age	hrs	Client Info		**0**	7177	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**NORMAL**	NORMAL	NORMAL

CONTAMINATION		method	limit/base	current	history1	history2
Fuel		WC Method	>4.0	**<1.0**	<1.0	<1.0
Glycol		WC Method		**NEG**	NEG	NEG

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>75	**8**	8	8
Chromium	ppm	ASTM D5185m	>8	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>2	**0**	0	<1
Titanium	ppm	ASTM D5185m	>3	**<1**	0	<1
Silver	ppm	ASTM D5185m	>2	**0**	0	<1
Aluminum	ppm	ASTM D5185m	>15	**1**	0	2
Lead	ppm	ASTM D5185m	>18	**6**	4	7
Copper	ppm	ASTM D5185m	>80	**81**	90	91
Tin	ppm	ASTM D5185m	>14	**<1**	<1	1
Vanadium	ppm	ASTM D5185m		**<1**	0	<1
Cadmium	ppm	ASTM D5185m		**0**	0	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	**11**	6	10
Barium	ppm	ASTM D5185m	10	**0**	0	0
Molybdenum	ppm	ASTM D5185m	100	**63**	64	61
Manganese	ppm	ASTM D5185m		**<1**	<1	<1
Magnesium	ppm	ASTM D5185m	450	**1532**	1544	1489
Calcium	ppm	ASTM D5185m	3000	**1226**	1205	1179
Phosphorus	ppm	ASTM D5185m	1150	**1055**	1077	1002
Zinc	ppm	ASTM D5185m	1350	**1344**	1332	1244
Sulfur	ppm	ASTM D5185m	4250	**3023**	2969	2519

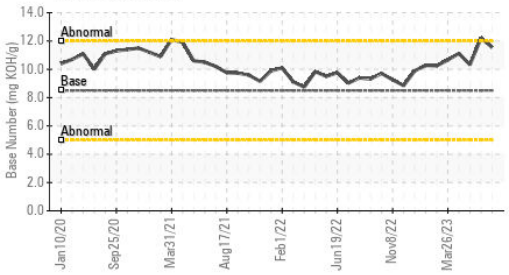
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>20	**2**	3	3
Sodium	ppm	ASTM D5185m	>158	**7**	8	9
Potassium	ppm	ASTM D5185m	>20	**1**	<1	1

INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844		**0.1**	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	**12.2**	11.5	11.9
Sulfation	Abs/.1mm	*ASTM D7415	>30	**23.8**	24.0	24.0

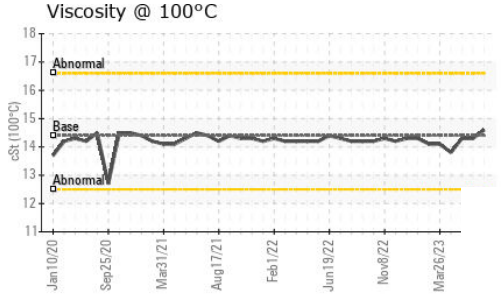
FLUID DEGRADATION		method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	**23.6**	24.9	24.3
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	**11.55**	12.21	10.32

OIL ANALYSIS REPORT

Base Number



Viscosity @ 100°C

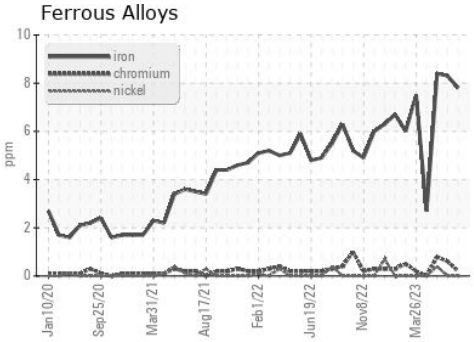


VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.1	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

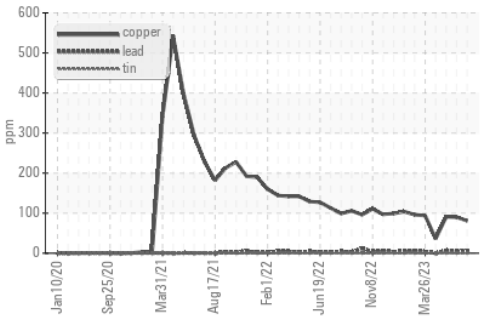
FLUID PROPERTIES		method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	**14.6**	14.3	14.3

GRAPHS

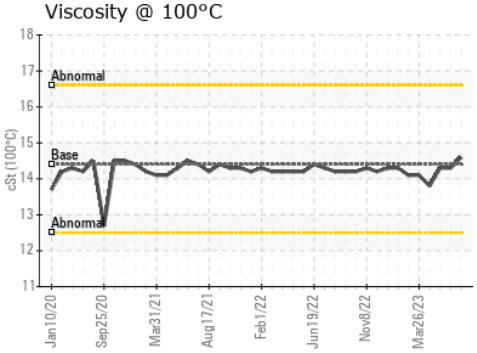
Ferrous Alloys



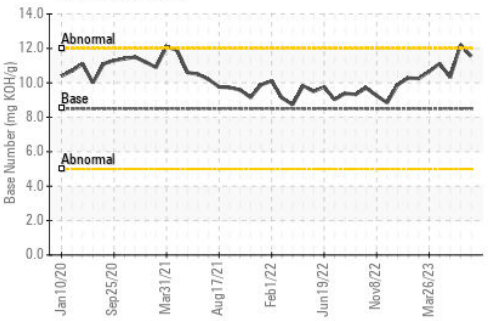
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0769309
Lab Number : 05900167
Unique Number : 10561523
Test Package : IND 2

Received : 17 Jul 2023
Diagnosed : 19 Jul 2023
Diagnostician : Jonathan Hester

To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

MARATHON PETROLEUM CO.
101 12TH ST
CATLETTSBURG, KY
US 41169
Contact: CORY GUMBERT
cagumbert@marathonpetroleum.com
T: (606)585-3950
F: x:

Report Id: MARCAT [WUSCAR] 05900167 (Generated: 07/19/2023 11:51:14) Rev: 1

Submitted By: M/V LOUISVILLE